Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
Use of Spectrum Bands Above 24 GHz For Mobile Radio Services	)	GN Docket No. 14-177
Establishing a More Flexible Framework to Facilitate Satellite Operations in the 27.5-28.35 GHz and 37.5-40 GHz Bands	)	IB Docket No. 15-256
Petition for Rulemaking of the Fixed Wireless Communications Coalition to Create Service Rules for the 42-43.5 GHz Band	)	RM-11664
Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services	)	WT Docket No. 10-112
Allocation and Designation of Spectrum for Fixed-Satellite Services in the 37.5-38.5 GHz, 40.5-41.5 GHz and 48.2-50.2 GHz Frequency Bands; Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band; Allocation of Spectrum in the 46.9-47.0 GHz Frequency Band for Wireless Services; and Allocation of Spectrum in the 37.0- 38.0 GHz and 40.0-40.5 GHz for Government Operations	)	IB Docket No. 97-95

PETITION FOR RECONSIDERATION OF THE SATELLITE INDUSTRY ASSOCIATION

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SUMMARY

The Satellite Industry Association ("SIA")[1][2] hereby submits this Petition for Reconsideration in response to the Commission's Report & Order ("*Report and Order*") in the above referenced proceeding.[3]

In order to meet the Commission's goals of promoting competition and efficient spectrum use in the 28 GHz and 39 GHz bands, it is essential that the Commission create a framework that promotes sharing, avoids gatekeepers, and maximizes effective spectrum use. Predictable and harmonized spectrum allocations are essential to attract the capital necessary to design and deploy satellite broadband networks. Such investment is vital, as current and upcoming satellite

[1] SIA is a U.S.-based trade association providing representation of the leading satellite operators, service providers, manufacturers, launch services providers, and ground equipment suppliers. For more than two decades, SIA has advocated on behalf of the U.S. satellite industry on policy, regulatory, and legislative issues affecting the satellite business. For more information, visit www.sia.org.

SIA Executive Members include: The Boeing Company; DIRECTV; EchoStar Corporation; Intelsat S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; Ligado Networks; Lockheed Martin Corporation; Northrop Grumman Corporation; OneWeb; SES Americom, Inc.; Space Exploration Technologies Corp.; SSL; and ViaSat, Inc.

SIA Associate Members include: ABS US Corp.; Artel, LLC; COMSAT Inc.: DigitalGlobe Inc.; DRS Technologies, Inc.; Eutelsat America Corp.; Global Eagle Entertainment; Glowlink Communications Technology, Inc.; Hughes; iDirect Government Technologies; Inmarsat, Inc.; Kymeta Corporation; L-3 Electron Technologies, Inc.; O3b Limited; Panasonic Avionics Corporation; Planet; Semper Fortis Solutions; TeleCommunication Systems, Inc.; Telesat Canada; TrustComm, Inc.; Ultisat, Inc.; and XTAR, LLC.

[2] This Petition for Reconsideration is supported by all SIA members except for DIRECTV, which abstains from participation.

[3] Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, GN Docket No. 14-177, Report and Order and Further Notice of Proposed Rulemaking, FCC 16-89 (Jul. 14, 2016) ("*Further Notice*" or "*Report and Order*").

communications systems will be an essential component of the next generation wireless communications ecosystem, referred to by some as "5G."

SIA proposes several items for reconsideration by the Commission in this proceeding. The *Report and Order* enables the operation of certain satellite facilities on a protected basis, consistent with the terms of the *Report and Order*, and establishes that such protected operations are not secondary. However, it is not expressly clear that such protected operations have co-primary status. Accordingly, at a minimum, the Commission should clarify that all such protected FSS operations are in fact co-primary with respect to the new UMFUS. Co-primary status for protected FSS operations would not have a significant impact on the ability of UMFUS to innovate and deploy robust networks, as it would not change the established sharing mechanisms, coordination guidelines, and operational restrictions.

SIA also directs the Commission's attention to Section 25.136(a). Under certain circumstances, it appears that this rule may not work as intended. For example, in low-population counties, it is very likely that an earth station could be sited in a manner that affects only about 40 people, but still trigger the 0.1% threshold. This has the unintended consequence of making deployment of FSS earth stations less likely in rural areas, even though such deployment would not affect UMFUS service.

The Commission has acknowledged that it is sensitive to the aggregate interference concerns the satellite industry has raised, and has directed its Bureaus to open a docket for further study of this issue. SIA intends to participate actively in the separate docket, and requests that the Commission incorporate that docket into this proceeding and consider the results of that docket in the reconsideration phase of this proceeding.

To minimize the potential for aggregate interference into FSS satellite receivers, SIA proposes that UMFUS stations be limited to a maximum transmit power level of 10 dBW (40 dBm) per station in accordance with No. 21.5 of the ITU Radio Regulations, which was adopted in order to facilitate shared terrestrial/satellite use of the 28 GHz band. This limit, by itself, will not ensure protection from harmful interference to FSS satellite receivers, but would reduce its probability and eliminate one of the most obvious oversights in these rules as they relate to the United States' international obligations.

I. INTRODUCTION

A. The Commission Should Encourage Continued Satellite Use of the Ka-band and V-band Through Balanced Regulations

Recent advances in satellite technology have led to unprecedented levels of connectivity worldwide. The capacity possible on individual satellites and associated networks is expanding exponentially, creating opportunities for true high speed broadband in the air, at sea, and on land. Satellite broadband connectivity is available throughout the United States, including in the hardest-to-reach and traditionally underserved areas, but also provides a competitive alternative in urban areas where terrestrial options may be expensive, following the pattern of competition introduced by satellite television and radio in previous generations. In addition, there is another wave of innovation underway as a result of the Commission's recent call for Ka-band, Ku-band, and V-band non-geostationary satellite systems, providing a glimpse of the future.[4]

[4] Just last month, there were nine new filings (for a combined number of twelve total filings) seeking access to 28 GHz-band spectrum for non-geostationary orbit satellite systems, and the Commission has established a cut-off date of March 1, 2017 for new non-geostationary orbit satellite systems seeking to operate in the 40/50 GHz range (including the 37/39 GHz bands included in the *Report and Order*). *See* Public Notice, DA 16-804, OneWeb Petition Accepted for Filing, IBFS File No. SAT-LOI-20160428-00041; Cut-Off Established for Additional NGSO-Like Satellite Applications or Petitions for Operations in the 10.7-12.7 GHz, 14.0-14.5 GHz, 17.8-18.6 GHz, 18.8-19.3 GHz, 27.5-28.35 GHz, 28.35-29.1 GHz, and 29.5-30.0 GHz Bands. See also

Current and upcoming satellite communications systems will be an essential component of the next generation wireless communications ecosystem, referred to by some as "5G." As SIA has previously explained, 5G refers to an integrated ecosystem of always on, ubiquitously available, high-speed connectivity.[5] Realizing the Commission's vision for next generation communications will require reliable, high-capacity communications that can only effectively be provided via satellite.[6] Satellite broadband services will continue to provide connectivity directly to users at home, on planes, or otherwise on the move. High throughput satellite ("HTS") systems will provide connectivity powering microcells and deployable 5G systems, extending the range and increasing the reliability of wireless networks. Low-power, small-form-factor satellite terminals will be essential to connecting the multitude of sensors and other machine-to-machine devices that will form the Internet of Things. And satellite data broadcast services will send critical over-the-air updates to fleets of vehicles and other connected devices, promoting safety and security. As 5G standards continue to develop and incorporate technologies like network virtualization to create a consistent user experience regardless of the underlying communications path, consumers may no longer know or care what network technology is providing their connectivity—so long as it just

Public Notice, DA 16-1244, Boeing Application Accepted for Filing in Part, IBFS File No. SAT-LOA-20160622-00058 and Cut-Off Established for Additional NGSO-Like Satellite Applications or Petitions for Operations in the 37.5-40 GHz, 40.0-42 GHz, 47.2-50.2 GHz AND 50.4-51.4 GHz Bands (Nov. 1, 2016).

[5] Reply Comments of Satellite Industry Association at 5-6, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95 (filed Oct. 31, 2016) ("*SIA FNPRM Reply Comments*"). See also, the EMEA Satellite Operators Association (ESOA) description and infographic at https://www.esoa.net/5g/.

[6] *See, e.g.* Comments of Inmarsat, Inc. at 5-8, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95 (filed Sept. 30, 2016).

works. Importantly, in the 5G paradigm, "mobile broadband" no longer necessarily implies "terrestrial broadband."

An effective spectrum policy for next generation communications cannot be a zero-sum game. In order to meet the Commission's goals of promoting competition and efficient spectrum use in the 28 GHz and 39 GHz bands, it is essential that the Commission create a framework for cooperation between spectrum users that provides the proper equities and incentives to promote sharing, avoid gatekeepers, and maximize effective spectrum use. One way to ensure this outcome is by adopting a co-primary sharing framework with appropriate limits in the 27.5-28.35 GHz ("28 GHz") and 38.6-40 GHz ("39 GHz") bands for each service to allow for robust network development. If past is prologue, satellite networks will inevitably play an important independent and complementary role to terrestrial networks in the provision of broadband in these bands. Therefore, it is essential that the various spectrum band dynamics under consideration at this early stage of this proceeding encourage cooperation among all parties within the Commission's established priorities.

The Commission has directed its Bureaus to open a docket for further study of the issue of aggregate interference into satellite receivers from Upper Microwave Flexible Use Service ("UMFUS") emissions in the 28 GHz band. On reconsideration in this proceeding, once the appropriate information has been received and analyzed, the Commission should examine the record developed in the separate docket and adjust its findings—and potentially its rules—taking into account the record on aggregate interference. The United States also must observe its treaty obligations to protect from UMFU emissions recorded frequency assignments of Fixed-Satellite Service ("FSS") networks licensed outside the United States that serve adjacent countries. On reconsideration, the Commission also should evaluate its ability to meet its treaty obligation to

immediately eliminate harmful interference if emissions from UMFUS transmitters in the United States are determined to likely cause harmful interference to the FSS space station receivers of other Administrations.

B. Investment and Innovation in Satellite Networks Requires Regulatory Certainty and Stable Spectrum Allocations

The satellite industry has invested billions of dollars and continues to invest in new technology and infrastructure to close the broadband gap, requiring years to plan and deploy these highly innovative systems. Predictable and harmonized spectrum allocations are essential to attract the capital necessary to design and deploy broadband satellite networks, including in the 28 GHz and 37/39 GHz bands. Satellite networks are already using these bands around the world and have billions of dollars invested in expansion. In most countries, these bands are allocated for exclusive satellite use at the moment; however, the United States and a few Asian countries are considering the 28 GHz band for terrestrial systems and the ITU is studying the 37/39 GHz band for potential identification for international mobile telecommunications (IMT) in 2019.

Given the inherent global coverage of satellite systems, it is important for the Commission to take into account the allocation decisions in other countries and regions to ensure compatibility of both terrestrial and satellite spectrum uses.[7] To the extent possible and within its spectrum priorities, the Commission should seek to avoid fragmentation of satellite spectrum internationally.

[7] Major countries and regional groups from China to Europe have determined to concentrate their study efforts for terrestrial mobile broadband spectrum on frequency bands in the 24.25-27.5 GHz range, citing the importance to their communications infrastructures of satellite uplink operations in the 27.5-30 GHz range. For example, CEPT intends to harmonize the 24.25-27.5 GHz band for Europe for 5G. Bands beyond those listed in Resolves 2 of Resolution 238, such as the 28 GHz band, are not supported for consideration by CEPT under this ITU WRC-19 Agenda item.

II. ITEMS FOR RECONSIDERATION

A. The Commission Should Reconsider the Sharing Regime Adopted in the *Report and Order*

The Commission should reconsider the sharing regime adopted in the *Report and Order* for the 28 GHz band in favor of one predicated on co-primary status for both FSS and UMFUS, within the service priorities established in the *Report and Order*. Granting co-primary status to FSS would be more consistent with the sound policy underlying the Commission's 28 GHz band plan since 1996, when the Commission made clear that FSS would have licensing priority over any subsequently-introduced services. Importantly, even with co-primary status for FSS, the Commission would not necessarily have to abandon the concept of the interference-protected earth station placement rules adopted in the *Report and Order*, as the Commission could still have in place suitable limits to protect both services. A co-primary spectrum sharing regime, with appropriate limitations in place to ensure each service has the opportunity to robustly innovate and deploy, would be most consistent with the expected uses of this band by terrestrial and satellite operators, and would best promote the public interest by reducing the amount of subsequent intervention that would otherwise be necessary by the Commission to ensure continued cooperation between the various spectrum stakeholders.

1. FSS Operators had a Reasonable Expectation of Primary Status vis-à-vis UMFUS in the 28 GHz Band

FSS operators have planned, deployed, and offered commercial services using the 28 GHz band with a reasonable expectation of priority with respect to new services like UMFUS. As explained in this proceeding by ViaSat and others,[8] for at least the last two decades, the

[8] ViaSat, Inc., *Ex Parte* Submission, GN Docket No. 14-177; IB Docket Nos. 15-256 & 97-95; RM-11664; WT Docket No. 10-112 (filed July 1, 2016) ("ViaSat July 1, 2016 Letter"); Inmarsat,

Commission has been clear that while FSS operations are treated as secondary to Local Multipoint Distribution Service ("LMDS"), 28 GHz FSS operations would have "licensing priority vis-à-vis any third service allocated domestically or internationally in the band."[9] Therefore, when considering introduction of the UMFUS in the 28 GHz band, the Commission's conceptual starting point should have been one in which FSS would have priority over the new service, not one in which FSS is secondary to the new service.[10] Here, it is clear that the Commission is introducing an entirely new service—the Upper Microwave Flexible Use *Service*—and accordingly FSS operators had a reasonable expectation, based on the Commission's orders, that they would enjoy priority over this new service.

UMFUS is a distinct service from LMDS in nearly every possible way. As an initial matter, the Commission's own rules make clear that UMFUS and LMDS are different services. Section 30.1, entitled "Creation of upper microwave flexible use service, scope and authority," states that LMDS licenses in the 28 GHz and 39 GHz bands "shall be reassigned to the Upper Microwave

Inc. *Ex Parte* Submission, GN Docket No. 14-177; IB Docket Nos. 15-256 & 97-95; RM-11664; WT Docket No. 10-112 (filed July 7, 2016) ("*Inmarsat July 7, 2016 Letter*").

[9] Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, First Report and Order, 11 FCC Rcd 19005, ¶ 44 (1996) ("*28 GHz First Report and Order*").

[10] The Commission considered and rejected ViaSat's argument for FSS priority in the *Order*. *Order*, ¶ 62. In doing so, however, the Commission misconstrued the thrust of this argument by focusing on the fact that the *28 GHz First Report and Order* left open the possibility for mobile LMDS at some time in the future. However, the point of the FSS argument is not that the Commission granted FSS priority over future *mobile* operations; it is that the Commission granted FSS priority over any future *newly introduced services* in the 28 GHz band.

Flexible Use Service" while LMDS licensees in other bands "shall remain in *that service.*"[11] Moreover, the licensing and operational rules vary dramatically across the two services.[12]

The *Report and Order* enables the operation of certain satellite facilities on a protected basis, consistent with the terms of the *Report and Order*, and establishes that such protected operations are not secondary.[13] However, it is not expressly clear that such protected operations have co-primary status. Accordingly, at a minimum, the Commission should clarify that all such protected FSS operations are in fact co-primary with respect to the new UMFUS. Doing so would be in keeping with the expectations and deployment framework established in the *28 GHz First Report and Order.*

2. Clarifying Co-Primary Status Would Promote Efficient Use of the 28 GHz Band

Clarifying that protected 28 GHz band FSS operations have co-primary status would not hinder robust deployment of UMFUS in the least, and would promote efficient use of the band. Under a co-primary regime, the Commission could retain the established sharing mechanisms, coordination guidelines, and operational restrictions to set appropriate expectations among the stakeholders while promoting widespread deployment and efficient spectrum use.

The consequences of granting co-primary status to protected FSS and UMFUS would be two-fold. First, it would afford satellite licensees greater certainty regarding the protection from

[11] 47 C.F.R. § 30.1 (emphasis added).

[12] Whereas LMDS licenses covered the entire 850 megahertz from 27.5-28.35 GHz (in addition to 29 GHz and 31 GHz frequencies), the UMFUS divides the 28 GHz band into two blocks of 425 megahertz and also includes 39 GHz frequencies that were never part of the LMDS. LMDS licenses were partitioned into Basic Trading Areas ("BTAs") while UMFUS licenses will be assigned by Partial Economic Areas ("PEAs"). Additionally, the two services differ in terms of their technical limits, construction requirements, cybersecurity obligations, and permissible services.

[13] *See, e.g., Report and Order*, ¶ 50; 47 C.F.R. § 25.202(a)(1) n.7.

harmful interference caused by terrestrial 28 GHz band operations. As noted in the *Report and Order*, satellite operators are concerned that upward transmissions from high-powered terrestrial stations will, in the aggregate, generate enough power to be received at the satellite receiver that significantly degrades satellite network performance.[14] The Commission, while stating that the satellite industry had not sufficiently demonstrated that harmful interference was likely to occur,[15] acknowledged the concerns raised and, demonstrating that it took the issue seriously, directed its Bureaus to open a docket for further study of the issue.[16] In addition, the Commission granted protection to space station receivers operating in connection with earth stations covered by 47 C.F.R. § 25.136.[17] Co-primary status for protected FSS operations would not have a significant impact on the ability of UMFUS to innovate and deploy robust networks, as it would not change the established sharing mechanisms, coordination guidelines, and operational restrictions. Co-primary status for all protected FSS operations would, however, explicitly recognize the entitlement to co-equal treatment, including under the existing earth station rules, and would increase certainty among satellite operators and promote greater investment and innovation in satellite systems.

Co-primary treatment is important to the efficient use of the 28 GHz band in a second major way. Establishing the principle that both terrestrial and satellite operators are entitled to the opportunity to thrive will clarify the right of each service and thereby promote good faith negotiation and cooperation between the industries. This will promote efficiency both on a case-

[14] *Report and Order*, ¶ 61.

[15] *Id.*, ¶ 69.

[16] *Id.*

[17] 47 C.F.R. § 25.202(a)(1), n.7.

by-case basis and in the larger context of future policymaking to flesh out the operational rules for the 28 GHz band.

In the lead-up to the *Report and Order*, several attempts at information sharing and collaboration between wireless and satellite interests were conducted, but these eventually broke down when there was no agreement on the fundamental rights of each service sufficient to give all parties incentive to compromise. This lack of cooperation was fundamentally based on the terrestrial community's belief that satellite operations would be secondary and, therefore, would not be entitled to any form of interference protection. Creating an environment where all sides come to the table with an understood mandate to co-exist within the respective domestic regulatory frameworks is the surest path to finding the solution that both the satellite industry and the terrestrial industry can live with and reducing the amount of intervention that will be required by the Commission. If spectrum sharing is the future, the Commission needs to provide all stakeholders with adequate status to encourage serious exchanges between those at the table.

The record compiled since the release of the *Report and Order* makes clear that the terrestrial wireless industry has not yet defined a vision for how it will use higher band frequencies. As Qualcomm stated, "it is currently unknown how licensees will use their new flexible use rights" at 28 GHz.[18] What seems clear, however, is that the wireless industry would prefer the Commission focus on identifying lower-band spectrum in the immediate future, and that these frequencies—not the 28 GHz band—will continue to be the basis for wide area terrestrial coverage.

[18] Comments of Qualcomm at 15, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95 (filed Sept. 30, 2016); *see also* Comments of CTIA at 19, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95 (filed Sept. 30, 2016) ("many questions remain about how the millimeter wave bands will ultimately be put to use").

What is becoming clear is that the current vision of 28 GHz band terrestrial wireless broadband will leverage small cell technology to provide extra capacity in the most congested areas or existing network densification. For example, just as CTIA urges the Commission to grant the wireless industry full flexible use of the higher band frequencies unfettered by any obligation to share or coexist with satellite operators, it also states that "examining mid- and low-band spectrum for mobile services" should be a "top priority,"[19] because this is the spectrum that "will continue to drive network coverage."[20] AT&T urges the Commission to recognize that its "key priority must be to make more spectrum in . . . low bands available" because "[w]ithout additional spectrum, particularly spectrum below 6 GHz, wireless coverage and capacity may fall behind."[21] The wireless industry, therefore, has expressly acknowledged that lower frequency bands—not the 28 GHz band—will be the primary spectrum used to extend terrestrial network coverage. An effective spectrum sharing regime should therefore provide flexibility into the future to allow robust deployment for all networks while recognizing that not all bands will have the same type of UMFUS.

By contrast, SIA has repeatedly explained that current satellite systems make robust use of 28 GHz band spectrum and systems are under development that will leverage many other higher frequency bands.[22] These systems provide diverse, mission critical, fixed and mobile

[19] Comments of CTIA at 8, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95 (filed Sept. 30, 2016).

[20] *Id.* at 3.

[21] Comments of AT&T at 4, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95 (filed Sept. 30, 2016); *see also* Comments of Qualcomm at 1, GN Docket No. 14-177, IB Docket No. 15-256, RM-11664, WT Docket No. 10-112, IB Docket No. 97-95 (filed Sept. 30, 2016) (noting that "lower band spectrum will continue to be essential in the successful delivery of 4G and 5G services coast-to-coast").

[22] *See supra* Section I.A; SIA FNPRM Reply Comments at 4-7.

communications services to consumers, government users, emergency responders, industry, and many others. These services operate in urban areas as well as rural, in areas of high population and low, in the most challenging geographies, and under environmental conditions that would cripple other network technologies. Moreover, satellite broadband systems will play several indispensable roles in the 5G ecosystem, being a key enabler to the next generation communications experience.

Adopting a co-primary spectrum sharing regime that gives satellite operators greater certainty about their ability to continue to grow and innovate would better reflect the reality of anticipated spectrum use in higher frequency bands, and would best serve the public interest.

B. The Commission Should Revise the Protection Limits Imposed on 28 GHz and 39 GHz Earth Stations

Under Section 25.136(a), an FSS earth station may be licensed without the need to protect future UMFUS deployments, if certain criteria are met.[23] Under certain circumstances, it appears that the rules may not work as intended. For example, in low-population counties, it is very likely that an earth station could be sited in a manner that affects only about 40 people, but still trigger the 0.1% threshold. This has the unintended consequence of making deployment of FSS earth stations less likely in rural areas, even though such deployment would not affect UMFUS. Section 25.136(a) should be reconsidered to address such unintended consequences.

C. Aggregate Interference

1. The Record in the Separate Proceeding on Aggregate Interference Should be Considered in the Reconsideration Phase of This Proceeding

As noted above, several SIA members proposed aggregate emission limits (in the form of aggregate skywards EIRP density levels) that would minimize the potential for interference to FSS

[23] *Order*, ¶¶ 54, 93; new 47 C.F.R. § 25.136 (a)(4)(i-iv).

satellite receivers from the emissions of UMFU facilities.[24] In the *Report and Order*, the Commission concluded that the record does not support a finding at this time that harmful interference is likely to occur from the aggregate emissions of new UMFUS mobile operations.[25] But the Commission stated it is sensitive to the aggregate interference concerns the satellite industry has raised; acknowledged that efforts are being undertaken to evaluate the potential impact of UMFUS on satellites; directed its Bureaus to open a docket for further study of this issue; and reserved the right to revisit the aggregate interference issue based upon the information that is provided in the docket.[26]

SIA intends to participate actively in the separate docket, and requests that the Commission incorporate that docket into this proceeding and consider the results of that docket in the reconsideration phase of this proceeding.

2. The Commission Must Meet its International Obligations to Protect Frequency Assignments for FSS Networks of Adjacent Countries

The Commission's decision to not place a limit on the skyward emissions of UMFUS makes it unclear how the United States will be able to ensure it observes its treaty obligation to protect recorded frequency assignments of FSS networks licensed outside the United States that serve adjacent countries – but which also cover the United States – and are using the 28 GHz band. In its *Report and Order*, the Commission improperly declined to adopt even the minimum level of protection afforded FSS space station receivers under the ITU rules. The Commission should reconsider this decision.

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[24] Ex Parte Letter from Satellite Operators to Marlene H. Dortch, GN Docket No. 14-177, et al. (May 12, 2016) (representing Echostar, Inmarsat, O3b, OneWeb, SES and ViaSat).

[25] *Report and Order*, ¶ 69.

[26] *Id.*

In order to better protect FSS space station receivers, RR No. 21.5 of the ITU Radio Regulations specifies a maximum transmit power level of 10 dBW (40 dBm) per station in the fixed or mobile services.[27] In these proceedings, the terrestrial proponents provided several examples of UMFUS base stations that would operate consistent with the 75 dBm EIRP limits contained in the *Report and Order*,[28] but with a combination of antenna gain and transmit power levels that are not allowed under the ITU Radio Regulations. By adopting UMFUS base station transmit EIRP levels without any skyward limits, the *Report and Order* potentially authorizes transmit power levels that are in excess of the 10 dBW limit contained in the ITU Radio Regulations to be directed towards FSS satellite receivers. To minimize the potential for interference into FSS satellite receivers of non-U.S. satellite networks, SIA proposes that UMFUS stations be limited to a maximum transmit power level of 10 dBW (40 dBm) per station in accordance with No. 21.5 of the ITU Radio Regulations. This limit, by itself, will not ensure protection from harmful interference to the FSS satellite receivers, but would reduce its probability and eliminate one of the most obvious oversights in these rules as they relate to the United States' international obligations.

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[27] ITU Radio Regulation No. 21.5 "The power delivered by a transmitter to the antenna of a station in the fixed or mobile services shall not exceed … +10 dBW in frequency bands above 10 GHz, except as cited in No. 21.5A." *See also* ITU Radio Regulation No. 21.6 ("The limits given in Nos. 21.2, 21.3, 21.4, 21.5 and 21.5A apply, where applicable, to the services and frequency bands indicated in Table 21-2 for reception by space stations where the frequency bands are shared with equal rights with the fixed or mobile services.")(Table 21-2 includes the 27.5-28.35 GHz band segment as a co-primary fixed satellite service band subject to the limits of No. 21.5). These ITU limits were adopted at WRC-2000. Section 101.113 of the Commission's rules was last revised in 1996, and has not yet been conformed to these more-recently-adopted ITU Radio Regulations.

[28] *Report and Order*, ¶ 65.

III. CONCLUSION

An effective spectrum policy for next generation communications cannot be a zero-sum game. It is essential that the Commission adopt balanced regulations to facilitate good faith negotiation and cooperation between the industries, encouraging a joint effort to meet the Commission's goals of promoting competition and efficient spectrum use in the 28 GHz and 39 GHz bands.

SIA proposes several items for reconsideration by the Commission in this proceeding. The Commission should clarify that the operation of certain satellite facilities on a protected basis are in fact on a co-primary basis with respect to the new UMFUS. Notably, doing so would not change the established sharing mechanisms, coordination guidelines, and operational restrictions. Under certain circumstances, Section 25.136(a) may not work as intended. For example, in low-population counties, it is very likely that an earth station could be sited in a manner that affects only about 40 people, but still trigger the 0.1% threshold. This has the unintended consequence of making deployment of FSS earth stations less likely in rural areas, even though such deployment would not affect UMFUS.

The separate docket addressing aggregate interference concerns raised by the satellite industry should be considered in the reconsideration phase of this proceeding, in addition to the SIA proposal that UMFUS stations be limited to a maximum transmit power level of 10 dBW (40 dBm) per station in accordance with No. 21.5 of the ITU Radio Regulations. On reconsideration, the Commission also should evaluate its ability to meet its treaty obligation to immediately eliminate harmful interference if emissions from UMFUS transmitters in the United States are determined to likely cause harmful interference to the FSS space station receivers of other Administrations.

Respectfully submitted,

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